

Local identification in physical networks

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Introduction

Consider an electric circuit in which some resistances, inductors and capacitors are interconnected with each other, as shown in Figure 1. Suppose that the objective is to identify one or a few components or interconnections, indicated in red in Figure 1 and Figure 2.

Method in literature

The method that is practically used for this is that the complete electric circuit is shut down. This is not always possible or desired.

Then an experiment is performed on a single interconnection to identify it. This means that a separate experiment is needed for each interconnection.

Thus, for identifying the two interconnections shown in red in Figure 1, the network needs to be shut down and two separate experiments (with distinct actuators, indicated in blue) are needed for identification.

Our new method

We developed a new identification method for which it is not needed to shut down the network. Moreover, only a single, very simple experiment is needed for the identification of multiple interconnections (or even the complete network). In this experiment, only a few sensors are needed (indicated in red) and only a single actuator is needed (indicated in blue), as shown in Figure 2.

If you want to learn more about this local identification method, please visit our poster!

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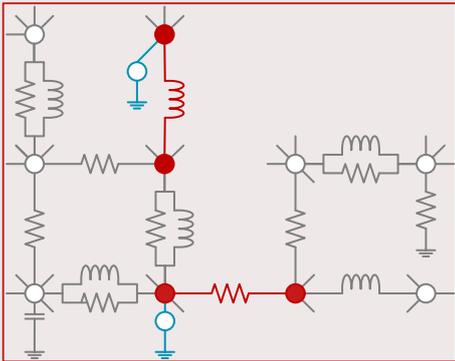


Figure 1: Method in literature.

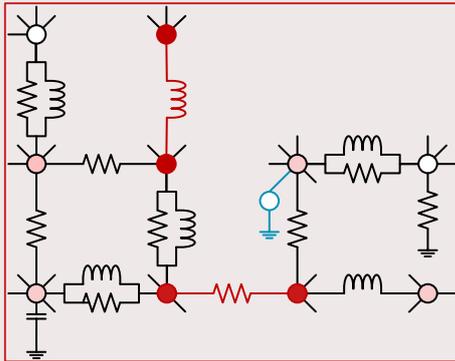


Figure 2: Our new method.



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